CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-74.

- After this Amendment: Claims 1-74.

Non-Elected, Canceled, or Withdrawn claims: 71-74 (which were withdrawn in a previous response).

Amended claims: 1, 38, and 46.

New claims: None.

Claims:

1.   (Currently Amended)   A method, comprising:

connecting a device to a network service in a plurality of stages;

wherein <u>at</u> each stage <u>the device</u> attempts different connection techniques until the stage is successful;

displaying in real-time, a status for each of the plurality of stages;

if the status comprises an error status, further displaying in real-time, troubleshooting help;

wherein the connecting in a plurality of stages includes:

detecting a physical cable connection;

~~establishing a data link by attempting different techniques until successful, including:~~

attempting to obtain Internet Protocol (IP) settings via a Dynamic Host Configuration Protocol (DHCP) networking protocol;

if obtaining the IP settings via the DHCP protocol is not successful, then <u>attempting to establish a data link over the network via a Point-to-Point Protocol over Ethernet (PPPOE);</u> displaying a status message, and querying a user for static IP settings;

if the IP settings are obtained, performing a DNS name resolution;

if the IP settings are not obtained then attempting to establish a data link over the network via a Point-to-Point Protocol over Ethernet (PPPOE);

sending test data between the device and the network service; and

determining a quality of service (QoS) of a connection between the device and the network service.

2. (Original) The method as recited in claim 1, further comprising using a first technique to complete a stage of the plurality of stages and if the first technique fails, then automatically attempting one or more subsequent techniques to complete the stage.

3. (Original) The method as recited in claim 1, wherein connecting includes a communicative coupling stage between the device and a network.

4.   (Original)   The method as recited in claim 1, wherein connecting includes a network settings stage for configuring one of a network protocol and a network address.

5.   (Original)   The method as recited in claim 4, wherein the network settings stage exists as an Internet Protocol (IP) settings stage and the network address exists as an IP address.

6.   (Original)   The method as recited in claim 5, wherein one or more techniques are attempted for completing the IP settings stage including one of a dynamic host configuration protocol (DHCP) technique, a point-to-point protocol over Ethernet (PPPoE) technique, and a bootstrap protocol (BOOTP) technique.

7.   (Original)   The method as recited in claim 4, wherein connecting includes a name resolution stage for associating the network address to a network domain name.

8.   (Original)   The method as recited in claim 7, wherein the name resolution stage exists as a domain name system (DNS) name resolution stage.

9.   (Original)   The method as recited in claim 1, wherein connecting includes a service connection stage for confirming communication with the network service.

10. (Original) The method as recited in claim 1, wherein the connecting proceeds between each of the multiple stages automatically.

11. (Original) The method as recited in claim 1, wherein the real-time status includes a message describing one of the plurality of stages.

12. (Original) The method as recited in claim 11, wherein the message describes progress of a technique used to complete one of the plurality of stages.

13. (Original) The method as recited in claim 1, wherein the real-time status includes a visual indicator of progress of one of the plurality of stages.

14. (Original) The method as recited in claim 1, wherein the real-time status includes a visual indicator of success or failure of one of the plurality of stages.

15. (Original) The method as recited in claim 1, wherein the troubleshooting help includes instructions for completing one of the plurality of stages.

16. (Original) The method as recited in claim 1, wherein the troubleshooting help includes instructions for completing a technique used to complete one of the plurality of stages.

17.   (Original)   The method as recited in claim 1, wherein the troubleshooting help includes a serial number of the device.

18.   (Original)   The method as recited in claim 1, wherein the troubleshooting help includes an error log compiled during the connecting.

19.   (Original)   The method as recited in claim 1, wherein the troubleshooting help includes a stage during the connecting at which a failure occurred.

20.   (Original)   The method as recited in claim 1, wherein the connecting includes a quality of service testing stage.

21.   (Original)   The method as recited in claim 20, wherein the troubleshooting includes quality of service information.

22.   (Original)   The method as recited in claim 21, wherein the quality of service information includes one of an upload bandwidth, a download bandwidth, a network data packet latency, a network data packet drop rate, and a network jitter value.

23.   (Original)   The method as recited in claim 1, wherein the device connects to a network service over the Internet.

24.   (Original)   The method as recited in claim 23, wherein connecting includes a network settings stage for configuring one of a network protocol for the Internet and an Internet Protocol address.

25.   (Original)   The method as recited in claim 24, wherein a dynamic host configuration protocol (DHCP) technique is attempted to complete the network settings stage and if the DHCP technique fails, then a point-to-point protocol over Ethernet (PPPoE) technique is automatically attempted to complete the network settings stage.

26.   (Original)   The method as recited in claim 1, wherein the connecting includes testing whether a communicative coupling exists between the device and the network;

displaying a real-time status of the testing, wherein if the communicative coupling exists then displaying a first success indicator and if the communicative coupling does not exist then displaying both a first failure indicator and troubleshooting instructions for establishing the communicative coupling;

attempting a network settings detection, wherein if the network settings are successfully detected then displaying a second success indicator and if the communicative coupling does not exist then displaying both a second failure indicator and troubleshooting instructions for detecting the network settings;

attempting a domain name system name resolution, wherein if a domain name is successfully resolved then displaying a third success indicator and if the

domain name is not resolved then displaying both a third failure indicator and troubleshooting instructions for resolving the domain name; and

attempting communication with a network service available on the network, wherein if a communication with the network service is successful then displaying a fourth success indicator and if the communication with the network service is not successful then displaying both a fourth failure indicator and troubleshooting instructions for communicating with the network service.

27. (Previously Presented) A network connection engine for connecting a device to a network, comprising:

a communicative coupling engine to verify a communicative coupling between a device and a network;

a network settings engine to configure network settings, wherein the network settings include a network address;

a name resolution engine to associate a computing domain name with the network address; and

a service connection engine to communicate with a network service; and

wherein at least one of the communicative coupling engine, the network settings engine, the name resolution engine, or the service connection engine successively apply different connection techniques upon a failure of part of a connection process.

28. (Previously Presented) The network connection engine as recited in claim 27, further comprising a quality of service module to test and record quality of service parameters in a network.

29. (Previously Presented) The network connection engine as recited in claim 27, further comprising a help and troubleshooting engine to instructions in response to a connection failure.

30. (Previously Presented) The network connection engine as recited in claim 27, further comprising an error logging engine to record errors during one or more connection attempts.

31. (Previously Presented) The network connection engine as recited in claim 30, wherein the error logging engine persists a failure record and associated extended error information of a failed connection stage for uploading to a service in response to a subsequent successful connection to a network; and

wherein the extended error information includes one of: quality of service (QoS) at a time of failure information, bandwidth information, latency information, presence of a universal plug and play (UPnP) router information, state of a network connection at a time of failure information, a number of connection attempts information, a number of logon attempts information, uplink and downlink times information, and serial number of a device being connected information.

32. (Previously Presented) The network connection engine as recited in claim 31, wherein the failure record and associated extended error information are uploaded for statistical treatment of multiple connection failures.

33. (Currently Amended) The network connection engine as recited in claim 31, wherein the failure record and associated extended error information are uploaded for a Bayes network to troubleshoot a connection stage failure between the device and the network.

34. (Previously Presented) The network connection engine as recited in claim 27, further comprising a user-interface engine to generate a user interface for displaying a status of the connecting the device to the network.

35. (Previously Presented) The network connection engine as recited in claim 34, wherein the user-interface engine generates a user interface to display one of help and troubleshooting instructions.

36. (Previously Presented) The network connection engine as recited in claim 34, wherein the user-interface engine generates a user interface to display quality of service information from a quality of service engine.

37. (Previously Presented) The network connection engine as recited in claim 34, wherein the user-interface engine generates a user interface to display error information from an error logging engine.

38. (Currently Amended) The network connection engine as recited in claim 27, further comprising a mode selector to switch between automatically connecting the device and the network and manually connecting the device and the network, wherein manually connecting includes manual entry of at least one network setting.

39. (Previously Presented) One or more computer readable storage media containing instructions that are executable by a computer to perform connection stages, comprising:

verifying a communicative coupling between a device and a network;

if the communicative coupling is verified, then obtaining an IP address using the communicative coupling, wherein obtaining an Internet Protocol (IP) address using dynamic host configuration protocol (DHCP) is attempted and if an IP address is not obtained using DHCP then obtaining an IP address using point-to-point protocol over Ethernet (PPPoE) is attempted;

if an IP address is obtained, then querying a domain name system (DNS) to resolve a domain name; and

if the domain name is resolved, then attempting communication with an online service using the IP address or the domain name.

40. (Previously Presented) The one or more computer readable storage media as recited in claim 39, further comprising instructions to test quality of service parameters between the device and the online service.

41. (Previously Presented) The one or more computer readable storage media as recited in claim 40, further comprising instructions to indicate in real-time one or more statuses of a connecting process between the device and the network, including a status for each of the verifying a communicative coupling, the obtaining an IP address, the querying a DNS, the attempting communication with an online service, and the testing quality of service parameters.

42. (Previously Presented) The one or more computer readable storage media as recited in claim 41, further comprising instructions to display troubleshooting instructions associated with a part of the method whenever the part of the method is not automatically completed.

43. (Previously Presented) The one or more computer readable storage media as recited in claim 39, further comprising instructions to store a failure record and associated extended error information with respect to failures in the connection stages of verifying a communicative coupling, obtaining an IP address, querying a domain name system, and attempting communication with an online service.

44. (Previously Presented) The one or more computer readable storage media as recited in claim 43, further comprising instructions to upload

the failure record and associated extended error information in response to a subsequent successful connection to a network.

45. (Previously Presented) The one or more computer readable storage media as recited in claim 44, wherein the failure record and associated extended error information is used in a Bayes network to troubleshoot a failure of at least one of the connection stages.

46. (Currently Amended) An automated method performed by a network connection-and- troubleshooting engine, comprising:

dividing a task of connecting a device to a network or a network service into stages;

selecting one of the stages;

attempting a technique for completing the selected stage;

displaying real-time status reports of the attempting and of a success or a failure of the technique;

if the technique is successful, then selecting a subsequent stage and attempting a technique to complete the subsequent stage;

if the technique is not successful, ~~then if more techniques are available~~ then selecting and attempting another technique for the stage; and

displaying troubleshooting instructions if the technique is not successful and no more techniques are available.

47. (Original) The automated method as recited in claim 46, wherein the device connects to a network service over the Internet.

48. (Original) The automated method as recited in claim 46, wherein connecting includes a communicative coupling stage between the device and the network.

49. (Original) The automated method as recited in claim 46, wherein connecting includes a network settings stage for configuring one of a network protocol and a network address.

50. (Original) The automated method as recited in claim 49, wherein the network settings stage exists as an Internet Protocol (IP) settings stage and the network address exists as an IP address.

51. (Original) The automated method as recited in claim 50, wherein one or more techniques are attempted for completing the IP settings stage including one of a dynamic host configuration protocol (DHCP) technique, a point-to-point protocol over Ethernet (PPPoE) technique, and a bootstrap protocol (BOOTP) technique.

52. (Original) The automated method as recited in claim 49, wherein connecting includes a name resolution stage for associating the network address to a network domain name.

53. (Original) The automated method as recited in claim 52, wherein the name resolution stage exists as a domain name system (DNS) name resolution stage.

54. (Original) The automated method as recited in claim 46, wherein connecting includes a service connection stage for confirming communication with the network service.

55. (Original) The automated method as recited in claim 46, wherein the connecting proceeds between each of the multiple stages automatically.

56. (Original) The automated method as recited in claim 46, wherein the real-time status includes a message describing one of the multiple stages.

57. (Original) The automated method as recited in claim 56, wherein the message describes progress of a technique used to complete one of the multiple stages.

58. (Original) The automated method as recited in claim 46, wherein the real-time status includes a visual indicator of progress of one of the multiple stages.

59. (Original) The automated method as recited in claim 46, wherein the real-time status includes a visual indicator of success or failure of one of the multiple stages.

60. (Original) The automated method as recited in claim 46, wherein the troubleshooting help includes instructions for completing one of the multiple stages.

61. (Original) The automated method as recited in claim 46, wherein the troubleshooting help includes instructions for completing a technique used to complete one of the multiple stages.

62. (Original) The automated method as recited in claim 46, wherein the troubleshooting help includes a serial number of the device.

63. (Original) The automated method as recited in claim 46, wherein the troubleshooting help includes an error log compiled during the connecting.

64. (Original) The automated method as recited in claim 46, wherein the troubleshooting help includes a stage during the connecting at which a failure occurred.

65. (Original) The automated method as recited in claim 46, wherein the connecting includes a quality of service testing stage.

66. (Original) The automated method as recited in claim 65, wherein the troubleshooting includes quality of service information.

67. (Original) The automated method as recited in claim 66, wherein the quality of service information includes one of an upload bandwidth, a download bandwidth, a network data packet latency, a network data packet drop rate, and a network jitter value.

68. (Original) The automated method as recited in claim 46, wherein for a given stage, if a technique used to complete the stage fails, then a subsequent technique is automatically attempted to complete the stage.

69. (Original) The automated method as recited in claim 68, wherein connecting includes a network settings stage for configuring one of a network protocol for the Internet and an Internet Protocol address.

70. (Original) The automated method as recited in claim 69, wherein a dynamic host configuration protocol (DHCP) technique is attempted to complete the network settings stage and if the DHCP technique fails, then a point-to-point protocol over Ethernet (PPPoE) technique is automatically attempted to complete the network settings stage.

71.   (Withdrawn)In a computer network connection and troubleshooting system having a graphical user interface including a display and a user interface selection device, a method of providing and selecting from a menu on the display comprising the steps of:

retrieving a set of menu entries for the menu including a menu having links for selecting between automatically connecting a device to a network and manually connecting the device to the network, wherein the manual connecting includes manual input of at least one network setting;

displaying the menu on the display comprising the set of edit menu entries;

receiving a menu entry selection signal indicative of the user interface selection device pointing at one of the links on the menu entry on the display, and, in response to the selection signal, selecting either automatic or manual connection of the device to the network.

72.   (Withdrawn)The method of providing and selecting from a menu as recited in claim 71, further comprising a menu to accept the manual input of the network settings.

73.   (Withdrawn)The method of providing and selecting from a menu as recited in claim 72, further comprising a menu to display a status of the connecting the device to the network.

74.   (Withdrawn)The method of providing a selecting from a menu as recited in claim 71, further comprising a menu to display troubleshooting instructions in response to a failure to connect the device to the network.